The **Game Animation and Design degree** prepares students to create animations, design and develop video games, and incorporate art assets using game industry tools.

### Program Requirements

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cis 1199</td>
<td>Introduction to Game Industry</td>
<td>3</td>
</tr>
<tr>
<td>Cis 1200</td>
<td>Game Design</td>
<td>3</td>
</tr>
<tr>
<td>Cis 1201</td>
<td>Advanced Game Design</td>
<td>3</td>
</tr>
<tr>
<td>Cis 1211</td>
<td>2D Game Development</td>
<td>3</td>
</tr>
<tr>
<td>Cis 1212</td>
<td>Game Asset Creation and File Optimization</td>
<td>3</td>
</tr>
<tr>
<td>Cis 1400*</td>
<td>Programming Logic and Technique</td>
<td>4</td>
</tr>
<tr>
<td>Cis 2212</td>
<td>3D Game Development</td>
<td>4</td>
</tr>
<tr>
<td>Cis 2332*</td>
<td>Game Animation</td>
<td>3</td>
</tr>
<tr>
<td>Mptv 2332*</td>
<td>Game Animation</td>
<td>3</td>
</tr>
</tbody>
</table>

* OR

### General Education

Each candidate for an Associate in Applied Science (A.A.S.) degree shall satisfactorily complete a minimum of 18 credits in General Education. For the **Game Animation and Design degree**, some General Education courses are already listed under program requirements. Therefore, students need 6 credits besides those listed under program requirements.

The following summarizes the minimum credits required in each of the specified General Education areas:

**Communication:** 6 credits
- Written: (3 credits) English 1101 or 1105
- Oral: (3 credits) Speech 1100, 1120 or 1150

**Suggested Course Sequence**

(2017-2019 CATALOG)

### First Semester (15 credits)

- Cis 1199 (3)
- Cis 1200 (3)
- Cis 1201 (3)
- Cis 1211 (3)
- Cis 1212 (3)
- Cis 1400* (4)

### Second Semester (16 credits)

- Cis 2212 (4)
- Cis 2332 or Mptv 2332 (3)
- Mptv 1324 (3)
- Mptv 2331 (3)
- Art 1101 (3)
- Physi 1100* (4)

* course has a prerequisite

For more information:
If you are considering this program as an area of study, please contact the Business and Technology Division office at 630-942-2592.

**Program web site:**
http://www.cod.edu/programs/cis/
**Physical and Life Sciences:** 3 to 5 credits
At least one course with a laboratory component.
*(Physics 1100 in program requirements fulfills this requirement)*

**Mathematics:** 3 to 5 credits
Select a minimum of 3 credits (1000 level or above).
Select Mathematics 1102, 1104 or 1120 only where required in the degree program. Only one from the following three courses may count toward overall degree requirement credit: Mathematics 1635, Psychology 2280 or Sociology 2205. Only one of the following courses may count toward overall degree credit: Mathematics 1428 or Mathematics 1431.

**Humanities and Fine Arts:** 3 credits
*(Art 1101 in program requirements fulfills this requirement)*

**Social and Behavioral Sciences:** 3 credits

**Global/Multicultural Studies or Contemporary Life Skills:** 2 credits
Complete at least 2 credits from the list of courses in the Global/Multicultural Studies or Contemporary Life Skills Category.
*(Cis 1400 in program requirements fulfills this requirement)*

<table>
<thead>
<tr>
<th>TOTAL CREDITS FOR AAS DEGREE</th>
</tr>
</thead>
<tbody>
<tr>
<td>64</td>
</tr>
</tbody>
</table>
Career Information  CIS.AAS.GAMEA

Job Title(s): Video Game Designers
Design Director, Designer/Writer, Game Designer, Game Designer/Creative Director,
Lead Designer, Lead Game Designer, Lead Level Designer, Mid Level Game Designer,
Senior Game Designer, World Designer

For salary and wage information, please visit:  www.onetonline.org

If you would like information regarding internships, resume development, interviewing
and job search skills, please contact the Career Services Center
Phone: 630-942-2230
www.cod.edu/careerservices  Twitter: @codcareercenter
The **Game Design and Development degree** prepares students to design and develop video games through application of game design elements and development tools used in the game industry.

**Program Requirements**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cis 1199</td>
<td>Introduction to Game Industry</td>
<td>3</td>
</tr>
<tr>
<td>Cis 1200</td>
<td>Game Design</td>
<td>3</td>
</tr>
<tr>
<td>Cis 1201</td>
<td>Advanced Game Design</td>
<td>3</td>
</tr>
<tr>
<td>Cis 1211</td>
<td>2D Game Development</td>
<td>3</td>
</tr>
<tr>
<td>Cis 1212</td>
<td>Game Asset Creation and File Optimization</td>
<td>3</td>
</tr>
<tr>
<td>Cis 1400</td>
<td>Programming Logic and Technique</td>
<td>4</td>
</tr>
<tr>
<td>Cis 2211</td>
<td>2D Game Scripting</td>
<td>3</td>
</tr>
<tr>
<td>Cis 2212</td>
<td>3D Game Development</td>
<td>4</td>
</tr>
<tr>
<td>Cis 2541</td>
<td>C++ Language Programming</td>
<td>4</td>
</tr>
<tr>
<td>Cis 2770</td>
<td>Introduction to System Analysis and Design</td>
<td>3</td>
</tr>
<tr>
<td>Cis 2290</td>
<td>Game Development Capstone Project</td>
<td>4</td>
</tr>
<tr>
<td>Physi 1100</td>
<td>Physics</td>
<td>4</td>
</tr>
<tr>
<td>Art 1101</td>
<td>Drawing I</td>
<td>3</td>
</tr>
<tr>
<td>Engli 1101</td>
<td>English Composition I</td>
<td>3</td>
</tr>
<tr>
<td>OR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engli 1105</td>
<td>Workplace Writing</td>
<td>3</td>
</tr>
<tr>
<td>Spec 1100</td>
<td>Fundamentals of Speech Communication</td>
<td>3</td>
</tr>
<tr>
<td>OR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spec 1120</td>
<td>Small Group Communication</td>
<td>3</td>
</tr>
<tr>
<td>OR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spec 1150</td>
<td>Introduction to Business Communication</td>
<td>3</td>
</tr>
<tr>
<td>Electives</td>
<td></td>
<td>8</td>
</tr>
<tr>
<td>General Education</td>
<td></td>
<td>6</td>
</tr>
</tbody>
</table>
| Each candidate for an Associate in Applied Science (A.A.S.) degree shall satisfactorily complete a minimum of 18 credits in General Education. For the **Game Design and Development degree**, some General Education courses are already listed under program requirements. Therefore, students need 6 credits besides those listed under program requirements.

The following summarizes the minimum credits required in each of the specified General Education areas:

**Communication**: 6 credits
- Written: (3 credits) English 1101 or 1105
- Oral: (3 credits) Speech 1100, 1120 or 1150
*English 1101 or 1105 and Speech 1110, 1120, or 1150 in program requirements fulfill this requirement*

**Physical and Life Sciences**: 3 to 5 credits
- At least one course with a laboratory component.
*Physics 1100 in program requirements fulfills this requirement*

**Suggested Course Sequence**

(Full Time Enrollment)

*Please note: A student’s readiness to perform college-level coursework is based on the student’s placement test and/or ACT scores. Below 1000 level coursework may be required prior to the student taking courses in the suggested sequences.*

**First Semester (16 credits)**
- Art 1101 (3)
- Cis 1199 (3)
- Cis 1400 (4)
- Engli 1101 or Engli 1105 (3)
- Mathematics (3)

**Second Semester (16 credits)**
- Cis 1200 (3)
- Cis 1211 (3)
- Cis 1212 (3)
- Cis 2541 (4)
- Speec 1100 or Speec 1120 or Speec 1150 (3)

**Third Semester (17 credits)**
- Cis 1201 (3)
- Cis 2211 (3)
- Cis 2212 (3)
- Cis 2541 (4)
- Physi 1100 (4)
- Social and Behavioral Sciences (3)

**Fourth Semester (15 credits)**
- Cis 2770 (3)
- Cis 2290 (4)
- Elective (4)
- Elective (4)

**For more information:**
If you are considering this program as an area of study, please contact the Business and Technology Division office at 630-942-2592.

Program web site:
Mathematics: 3 to 5 credits
Select a minimum of 3 credits (1000 level or above). Select Mathematics 1102, 1104 or 1120 only where required in the degree program. Only one from the following three courses may count toward overall degree requirement credit: Mathematics 1635, Psychology 2280 or Sociology 2205. Only one of the following courses may count toward overall degree credit: Mathematics 1428 or Mathematics 1431.

Humanities and Fine Arts: 3 credits
(Art 1101 in program requirements fulfills this requirement)

Social and Behavioral Sciences: 3 credits

Global/Multicultural Studies or Contemporary Life Skills: 2 credits
Complete at least 2 credits from the list of courses in the Global/Multicultural Studies or Contemporary Life Skills Category.
(Cis 1400 in program requirements fulfills this requirement)

<table>
<thead>
<tr>
<th>TOTAL CREDITS FOR AAS DEGREE</th>
</tr>
</thead>
<tbody>
<tr>
<td>64</td>
</tr>
</tbody>
</table>
Career Information  CIS.AAS.GAMED

Job Title(s): Video Game Designers
Design Director, Designer/Writer, Game Designer, Game Designer/Creative Director,
Lead Designer, Lead Game Designer, Lead Level Designer, Mid Level Game Designer,
Senior Game Designer, World Designer

For salary and wage information, please visit:  www.onetonline.org

If you would like information regarding internships, resume development, interviewing
and job search skills, please contact the Career Services Center
Phone:  630-942-2230
www.cod.edu/careerservices  Twitter:  @codcareercenter
The **Game Programming and Development degree** prepares students to develop video games using programming languages and development tools used in the game industry.

**Program Requirements**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cis 1199</td>
<td>Introduction to Game Industry</td>
<td>3</td>
</tr>
<tr>
<td>Cis 1200</td>
<td>Game Design</td>
<td>3</td>
</tr>
<tr>
<td>Cis 1211</td>
<td>2D Game Development</td>
<td>3</td>
</tr>
<tr>
<td>Cis 1212</td>
<td>Game Asset Creation and File Optimization</td>
<td>3</td>
</tr>
<tr>
<td>Cis 1400</td>
<td>Programming Logic and Technique</td>
<td>4</td>
</tr>
<tr>
<td>Cis 2211</td>
<td>2D Game Scripting</td>
<td>3</td>
</tr>
<tr>
<td>Cis 2212</td>
<td>3D Game Development</td>
<td>4</td>
</tr>
<tr>
<td>Cis 2220</td>
<td>Game Programming Using C++</td>
<td>3</td>
</tr>
<tr>
<td>Cis 2420</td>
<td>Microprocessor Assembly Language</td>
<td>4</td>
</tr>
<tr>
<td>Cis 2541</td>
<td>C++ Language Programming</td>
<td>4</td>
</tr>
<tr>
<td>Cis 2542</td>
<td>Advanced C++ with Data Structure Applications</td>
<td>4</td>
</tr>
<tr>
<td>Cis 2770</td>
<td>Introduction to System Analysis and Design</td>
<td>3</td>
</tr>
<tr>
<td>Cis 2290</td>
<td>Game Development Capstone Project</td>
<td>4</td>
</tr>
<tr>
<td>Physi 1100</td>
<td>Physics</td>
<td>4</td>
</tr>
<tr>
<td>Math 1115</td>
<td>Technical Mathematics I</td>
<td>3</td>
</tr>
<tr>
<td>Math 1428</td>
<td>College Algebra with Applications</td>
<td>3</td>
</tr>
<tr>
<td>Math 1431</td>
<td>Precalculus I</td>
<td>5</td>
</tr>
<tr>
<td>Math 1432</td>
<td>Precalculus II: Trigonometry</td>
<td>3</td>
</tr>
<tr>
<td>Engli 1101</td>
<td>English Composition I</td>
<td>3</td>
</tr>
<tr>
<td>Engli 1105</td>
<td>Workplace Writing</td>
<td>3</td>
</tr>
<tr>
<td>Speec 1100</td>
<td>Fundamentals of Speech Communication</td>
<td>3</td>
</tr>
<tr>
<td>Speec 1120</td>
<td>Small Group Communication</td>
<td>3</td>
</tr>
<tr>
<td>Speec 1150</td>
<td>Introduction to Business Communication</td>
<td>3</td>
</tr>
</tbody>
</table>

* - course has a prerequisite

**General Education**

Each candidate for an Associate in Applied Science (A.A.S.) degree shall satisfactorily complete a minimum of 18 credits in General Education. For the **Game Programming and Development degree**, some General Education courses are already listed under program requirements. Therefore, students need 6 credits besides those listed under program requirements.

For more information:

If you are considering this program as an area of study, please contact the Business and Technology Division office at 630-942-2592.

**Program web site:**

http://www.cod.edu/programs/cis/
The following summarizes the minimum credits required in each of the specified General Education areas:

**Communication:** 6 credits  
Written: (3 credits) English 1101 or 1105  
Oral: (3 credits) Speech 1100, 1120 or 1150  
*(English 1101 or 1105 and Speech 1110, 1120, or 1150 in program requirements fulfill this requirement)*

**Physical and Life Sciences:** 3 to 5 credits  
At least one course with a laboratory component.  
*(Physics 1100 in program requirements fulfills this requirement)*

**Mathematics:** 3 to 5 credits  
Select a minimum of 3 credits (1000 level or above). Select Mathematics 1102, 1104 or 1120 only where required in the degree program. Only one from the following three courses may count toward overall degree requirement credit: Mathematics 1635, Psychology 2280 or Sociology 2205. Only one of the following courses may count toward overall degree credit: Mathematics 1428 or Mathematics 1431.  
*(Math 1115, 1428, 1431, or 1432 in program requirements fulfill this requirement)*

**Humanities and Fine Arts:** 3 credits  

**Social and Behavioral Sciences:** 3 credits  

**Global/Multicultural Studies or Contemporary Life Skills:** 2 credits  
Complete at least 2 credits from the list of courses in the Global/Multicultural Studies or Contemporary Life Skills Category.  
*(Cis 1400 in program requirements fulfills this requirement)*

<table>
<thead>
<tr>
<th>TOTAL CREDITS FOR AAS DEGREE</th>
</tr>
</thead>
<tbody>
<tr>
<td>64 to 66</td>
</tr>
</tbody>
</table>
Career Information CIS.AAS.GAMEP

Job Title(s): Video Game Designers
Design Director, Designer/Writer, Game Designer, Game Designer/Creative Director,
Lead Designer, Lead Game Designer, Lead Level Designer, Mid Level Game Designer,
Senior Game Designer, World Designer

For salary and wage information, please visit: www.onetonline.org

If you would like information regarding internships, resume development, interviewing
and job search skills, please contact the Career Services Center
Phone: 630-942-2230
www.cod.edu/careerservices  Twitter: @codcareercenter
Computer Information Systems | Associate in Applied Science
Field of Study Code: CIS.AAS.SOFTW

Catalog Description

The Software Development degree prepares students to design, develop, and maintain software through the implementation of established software design constructs in standard programming languages.

Program Requirements ..................................................34
Cis 1150 Understanding Computers, Information, and Systems ..................................3
Cis 1160 Windows Command Shell ..................................3
Cis 1180* Introduction to Networking ...............................3
Cis 1230* Microcomputer Database Application ..............3
Cis 1310* HTML and CSS .............................................3
Cis 1400* Programming Logic and Technique .................4
Cis 1450* Introduction to Linux/Unix Operating Systems ..................................3
Cis 2330* Introduction to XML .....................................3
Cis 2770 Introduction to System Analysis and Design ..3
Cis 2790* Systems Analyst Simulation ............................3
Engi 1105* Workplace Writing .....................................3

Emphases Courses .....................................................16
Select any two course sequences for a minimum of 16 hours.

C++ Emphasis ............................................................8
This emphasis focuses on the creation, maintenance, and support of software applications in the C++ environment.
Cis 2541* C++ Language Programming ..........................4
Cis 2542* Advanced C++ Programming ..........................4

Java Emphasis ............................................................8
This emphasis focuses on the creation, maintenance, and support of software applications in the Java environment.
Cis 2571* Introduction to Java ......................................4
Cis 2572* Collections in Java .......................................4

Visual Basic Emphasis ................................................8
This emphasis focuses on the creation, maintenance, and support of software applications in the VB environment.
Cis 1510* Graphical User Interface Programming ..........4
Cis 2510* Advanced Graphical User Interface Programming ..................................4

.NET Emphasis .........................................................12
This emphasis focuses on the creation, maintenance, and support of software applications in the .NET environment.
Cis 1510* Graphical User Interface Programming ............4
Cis 2350* Introduction to ASP.NET ..............................4
Cis 2561* Introduction to C# .NET ..............................4
* - course has a prerequisite

Suggested Course Sequence
(Full Time Enrollment)
(C++ and Java Emphases)

Please note: A student’s readiness to perform college-level coursework is based on the student’s placement test and/or ACT scores. Below 1000 level coursework may be required prior to the student taking courses in the suggested sequences.

First Semester (16 credits)
• Cis 1150 (3)
• Cis 1160 (3)
• Cis 1400 (4)
• Engi 1105 (3)
• Math 1428 or 1431 (3)

Second Semester (16 credits)
• Cis 1180 (3)
• Cis 1310 (3)
• Cis 2541 (4)
• Spec 1100 or 1120 or 1150 (3)
• Humanities and Fine Arts (3)

Third Semester (17 credits)
• Cis 2330 (3)
• Cis 2542 (4)
• Cis 2770 (3)
• Cis 2571 (4)
• Physical and Life Sciences (3)

Fourth Semester (16 credits)
• Cis 1230 (3)
• Cis 1450 (3)
• Cis 2790 (3)
• Cis 2572 (4)
• Social and Behavioral Sciences (3)

For more information:
If you are considering this program as an area of study, please contact the Business and Technology Division office at 630-942-2592.

Program web site:
http://www.cod.edu/programs/cis/

CIS.AAS.SOFTW (C++ & Java)
General Education ................................................. 15
Each candidate for an Associate in Applied Science (A.A.S.) degree shall satisfactorily complete a minimum of 18 credits in General Education. For the Software Development degree, some General Education courses are already listed under program requirements. Therefore, students need 15 credits besides those listed under program requirements.

The following summarizes the minimum credits required in each of the specified General Education areas:

Communication: 6 credits
Written: (3 credits) English 1101 or 1105
 (*English 1105 in program requirements fulfills this requirement*)

Oral: (3 credits) Speech 1100, 1120 or 1150

Physical and Life Sciences: 3 to 5 credits
At least one course with a laboratory component.

Mathematics: 3 to 5 credits
Select a minimum of 3 credits (1000 level or above).
Select Mathematics 1102, 1104 or 1120 only where required in the degree program. Only one from the following three courses may count toward overall degree requirement credit: Mathematics 1635, Psychology 2280 or Sociology 2205. Only one of the following courses may count toward overall degree credit: Mathematics 1428 or Mathematics 1431.

Humanities and Fine Arts: 3 credits

Social and Behavioral Sciences: 3 credits

Global/Multicultural Studies or Contemporary Life Skills: 2 credits
Complete at least 2 credits from the list of courses in the Global/Multicultural Studies or Contemporary Life Skills Category.
 (*Cis 1150 in program requirements fulfills this requirement*)

<table>
<thead>
<tr>
<th>TOTAL CREDITS FOR AAS DEGREE</th>
</tr>
</thead>
<tbody>
<tr>
<td>65</td>
</tr>
</tbody>
</table>
Catalog Description

The Software Development degree prepares students to design, develop, and maintain software through the implementation of established software design constructs in standard programming languages.

Program Requirements ..........................................................34
Cis 1150  Understanding Computers, Information, and Systems .............................................3
Cis 1160  Windows Command Shell ........................................3
Cis 1180* Introduction to Networking ..................................3
Cis 1230* Microcomputer Database Application .................3
Cis 1310* HTML and CSS .................................................3
Cis 1400* Programming Logic and Technique ....................4
Cis 1450* Introduction to Linux/Unix Operating Systems .................................................3
Cis 2330* Introduction to XML ............................................3
Cis 2770  Introduction to System Analysis and Design ..........3
Cis 2790* Systems Analyst Simulation ...............................3
Engli 1105* Workplace Writing ........................................3

Emphases Courses ..............................................................16
Select any two course sequences for a minimum of 16 hours.

C++ Emphasis .................................................................8
This emphasis focuses on the creation, maintenance, and support of software applications in the C++ environment.
Cis 2541*  C++ Language Programming ..............................4
Cis 2542*  Advanced C++ Programming ...............................4

Java Emphasis .................................................................8
This emphasis focuses on the creation, maintenance, and support of software applications in the Java environment.
Cis 2571*  Introduction to Java ............................................4
Cis 2572*  Collections in Java ..............................................4

Visual Basic Emphasis .......................................................8
This emphasis focuses on the creation, maintenance, and support of software applications in the VB environment.
Cis 1510*  Graphical User Interface Programming.................4
Cis 2510*  Advanced Graphical User Interface Programming..4

.NET Emphasis ..............................................................12
This emphasis focuses on the creation, maintenance, and support of software applications in the .NET environment.
Cis 1510*  Graphical User Interface Programming.................4
Cis 2350*  Introduction to ASP.NET .................................4
Cis 2561*  Introduction to C# .NET ..................................4
* - course has a prerequisite

Suggested Course Sequence
(Full Time Enrollment)
(C++ and Visual Basic Emphases)
Please note: A student's readiness to perform college-level coursework is based on the student's placement test and/or ACT scores. Below 1000 level coursework may be required prior to the student taking courses in the suggested sequences.

First Semester (16 credits)
- Cis 1150 (3)
- Cis 1160 (3)
- Cis 1400 (4)
- Engli 1105 (3)
- Math 1428 or 1431 (3)

Second Semester (16 credits)
- Cis 1180 (3)
- Cis 1310 (3)
- Cis 2541 (4)
- Spec 1100 or 1120 or 1150 (3)
- Humanities and Fine Arts (3)

Third Semester (17 credits)
- Cis 2330 (3)
- Cis 2542 (4)
- Cis 2770 (3)
- Cis 1510 (4)
- Physical and Life Sciences (3)

Fourth Semester (16 credits)
- Cis 1230 (3)
- Cis 1450 (3)
- Cis 2790 (3)
- Cis 2510 (4)
- Social and Behavioral Sciences (3)

For more information:
If you are considering this program as an area of study, please contact the Business and Technology Division office at 630-942-2592.

Program web site:
http://www.cod.edu/programs/cis/
Each candidate for an Associate in Applied Science (A.A.S.) degree shall satisfactorily complete a minimum of 18 credits in General Education. For the Software Development degree, some General Education courses are already listed under program requirements. Therefore, students need 15 credits besides those listed under program requirements.

The following summarizes the minimum credits required in each of the specified General Education areas:

**Communication:** 6 credits  
Written: (3 credits) English 1101 or 1105  
*(English 1105 in program requirements fulfills this requirement)*  
Oral: (3 credits) Speech 1100, 1120 or 1150

**Physical and Life Sciences:** 3 to 5 credits  
At least one course with a laboratory component.

**Mathematics:** 3 to 5 credits  
Select a minimum of 3 credits (1000 level or above).  
Select Mathematics 1102, 1104 or 1120 only where required in the degree program. Only one from the following three courses may count toward overall degree requirement credit: Mathematics 1635, Psychology 2280 or Sociology 2205. Only one of the following courses may count toward overall degree credit: Mathematics 1428 or Mathematics 1431.

**Humanities and Fine Arts:** 3 credits

**Social and Behavioral Sciences:** 3 credits

**Global/Multicultural Studies or Contemporary Life Skills:** 2 credits  
Complete at least 2 credits from the list of courses in the Global/Multicultural Studies or Contemporary Life Skills Category.  
*(Cis 1150 in program requirements fulfills this requirement)*

<table>
<thead>
<tr>
<th>TOTAL CREDITS FOR AAS DEGREE</th>
</tr>
</thead>
<tbody>
<tr>
<td>65</td>
</tr>
</tbody>
</table>

CIS.AAS.SOFTW (C++ & Visual Basic)
Catalog Description

The Software Development degree prepares students to design, develop, and maintain software through the implementation of established software design constructs in standard programming languages.

Program Requirements .............................................34
Cis 1150 Understanding Computers, Information, and Systems .............................................3
Cis 1160 Windows Command Shell ....................................3
Cis 1180* Introduction to Networking ............................3
Cis 1230* Microcomputer Database Application ................3
Cis 1310* HTML and CSS ........................................3
Cis 1400* Programming Logic and Technique ................4
Cis 1450* Introduction to Linux/Unix Operating Systems .............................................3
Cis 2330* Introduction to XML ....................................3
Cis 2770 Introduction to System Analysis and Design ..3
Cis 2790* Systems Analyst Simulation ..........................3
Engli 1105* Workplace Writing ..................................3

Emphases Courses ..................................................16
Select any two course sequences for a minimum of 16 hours.

C++ Emphasis ..........................................................8
This emphasis focuses on the creation, maintenance, and support of software applications in the C++ environment.
Cis 2541* C++ Language Programming .........................4
Cis 2542* Advanced C++ Programming .......................4

Java Emphasis ..........................................................8
This emphasis focuses on the creation, maintenance, and support of software applications in the Java environment.
Cis 2571* Introduction to Java ...................................4
Cis 2572* Collections in Java .....................................4

Visual Basic Emphasis ...............................................8
This emphasis focuses on the creation, maintenance, and support of software applications in the VB environment.
Cis 1510* Graphical User Interface Programming ..........4
Cis 2510* Advanced Graphical User Interface Programming .............................................4

.NET Emphasis ..........................................................12
This emphasis focuses on the creation, maintenance, and support of software applications in the .NET environment.
Cis 1510* Graphical User Interface Programming ..........4
Cis 2350* Introduction to ASP.NET ................................4
Cis 2561* Introduction to C# .NET ...............................4
* - course has a prerequisite

Suggested Course Sequence
(Full Time Enrollment)
(C++ and .NET Emphases)

Please note: A student’s readiness to perform college-level coursework is based on the student’s placement test and/or ACT scores. Below 1000 level coursework may be required prior to the student taking courses in the suggested sequences.

First Semester (16 credits)
• Cis 1150 (3)
• Cis 1160 (3)
• Cis 1400 (4)
• Engli 1105 (3)
• Math 1428 or 1431 (3)

Second Semester (20 credits)
• Cis 1180 (3)
• Cis 1310 (3)
• Cis 2541 (4)
• Cis 2350 (4)
• Speec 1100 or 1120 or 1150 (3)
• Humanities and Fine Arts (3)

Third Semester (17 credits)
• Cis 2330 (3)
• Cis 2542 (4)
• Cis 2770 (3)
• Cis 1510 (4)
• Physical and Life Sciences (3)

Fourth Semester (16 credits)
• Cis 1230 (3)
• Cis 1450 (3)
• Cis 2790 (3)
• Cis 2561 (4)
• Social and Behavioral Sciences (3)

For more information:
If you are considering this program as an area of study, please contact the Business and Technology Division office at 630-942-2592.

Program web site:
http://www.cod.edu/programs/cis/
General Education ................................................................. 15
Each candidate for an Associate in Applied Science (A.A.S.) degree shall satisfactorily complete a minimum of 18 credits in General Education. For the Software Development degree, some General Education courses are already listed under program requirements. Therefore, students need 15 credits besides those listed under program requirements.

The following summarizes the minimum credits required in each of the specified General Education areas:

Communication: 6 credits
Written: (3 credits) English 1101 or 1105
(English 1105 in program requirements fulfills this requirement)

Oral: (3 credits) Speech 1100, 1120 or 1150

Physical and Life Sciences: 3 to 5 credits
At least one course with a laboratory component.

Mathematics: 3 to 5 credits
Select a minimum of 3 credits (1000 level or above).
Select Mathematics 1102, 1104 or 1120 only where required in the degree program. Only one from the following three courses may count toward overall degree requirement credit: Mathematics 1635, Psychology 2280 or Sociology 2205. Only one of the following courses may count toward overall degree credit: Mathematics 1428 or Mathematics 1431.

Humanities and Fine Arts: 3 credits

Social and Behavioral Sciences: 3 credits

Global/Multicultural Studies or Contemporary Life Skills: 2 credits
Complete at least 2 credits from the list of courses in the Global/Multicultural Studies or Contemporary Life Skills Category.
(Cis 1150 in program requirements fulfills this requirement)

TOTAL CREDITS FOR AAS DEGREE 69
Computer Information Systems | Associate in Applied Science  
Field of Study Code: CIS.AAS.SOFTW

Catalog Description

The Software Development degree prepares students to design, develop, and maintain software through the implementation of established software design constructs in standard programming languages.

Program Requirements .........................................................34
Cis 1150 Understanding Computers, Information, and Systems ......................................3
Cis 1160 Windows Command Shell ........................................3
Cis 1180* Introduction to Networking .........................3
Cis 1230* Microcomputer Database Application ..........3
Cis 1310* HTML and CSS ..............................................3
Cis 1400* Programming Logic and Technique .............4
Cis 1450* Introduction to Linux/Unix Operating Systems ........................................3
Cis 2330* Introduction to XML ....................................3
Cis 2470 Introduction to System Analysis and Design ...3
Cis 2790* Systems Analyst Simulation ..............................3
Engi 1105* Workplace Writing ..................................3

Emphases Courses .............................................................16
Select any two course sequences for a minimum of 16 hours.

C++ Emphasis .................................................................8
This emphasis focuses on the creation, maintenance, and support of software applications in the C++ environment.
Cis 2541* C++ Language Programming .........................4
Cis 2542* Advanced C++ Programming .........................4

Java Emphasis .................................................................8
This emphasis focuses on the creation, maintenance, and support of software applications in the Java environment.
Cis 2571* Introduction to Java ......................................4
Cis 2572* Collections in Java .....................................4

Visual Basic Emphasis .....................................................8
This emphasis focuses on the creation, maintenance, and support of software applications in the VB environment.
Cis 1510* Graphical User Interface Programming ....4
Cis 2510* Advanced Graphical User Interface Programming ........................................4

.NET Emphasis .............................................................12
This emphasis focuses on the creation, maintenance, and support of software applications in the .NET environment.
Cis 1510* Graphical User Interface Programming ....4
Cis 2350* Introduction to ASP.NET .........................4
Cis 2561* Introduction to C# .NET ..............................4
* - course has a prerequisite

Suggested Course Sequence  
(Full Time Enrollment)  
(Java and .NET Emphases)

Please note: A student’s readiness to perform college-level coursework is based on the student’s placement test and/or ACT scores. Below 1000 level coursework may be required prior to the student taking courses in the suggested sequences.

First Semester (16 credits)
  - Cis 1180 (3)
  - Cis 1160 (3)
  - Cis 1400 (4)
  - Engi 1105 (3)
  - Math 1428 or 1431 (3)

Second Semester (20 credits)
  - Cis 1180 (3)
  - Cis 1310 (3)
  - Cis 2571 (4)
  - Cis 2350 (4)
  - Spec 1100 or 1120 or 1150 (3)
  - Humanities and Fine Arts (3)

Third Semester (17 credits)
  - Cis 2330 (3)
  - Cis 2572 (4)
  - Cis 2770 (3)
  - Cis 1510 (4)
  - Physical and Life Sciences (3)

Fourth Semester (16 credits)
  - Cis 1230 (3)
  - Cis 1450 (3)
  - Cis 2790 (3)
  - Cis 2561 (4)
  - Social and Behavioral Sciences (3)

For more information:
If you are considering this program as an area of study, please contact the Business and Technology Division office at 630-942-2592.

Program web site:
http://www.cod.edu/programs/cis/

CIS.AAS.SOFTW (Java & .NET)
Each candidate for an Associate in Applied Science (A.A.S.) degree shall satisfactorily complete a minimum of 18 credits in General Education. For the Software Development degree, some General Education courses are already listed under program requirements. Therefore, students need 15 credits besides those listed under program requirements.

The following summarizes the minimum credits required in each of the specified General Education areas:

**Communication:** 6 credits
- Written: (3 credits) English 1101 or 1105
  *(English 1105 in program requirements fulfills this requirement)*
- Oral: (3 credits) Speech 1100, 1120 or 1150

**Physical and Life Sciences:** 3 to 5 credits
- At least one course with a laboratory component.

**Mathematics:** 3 to 5 credits
- Select a minimum of 3 credits (1000 level or above).
- Select Mathematics 1102, 1104 or 1120 only where required in the degree program. Only one from the following three courses may count toward overall degree requirement credit: Mathematics 1635, Psychology 2280 or Sociology 2205. Only one of the following courses may count toward overall degree credit: Mathematics 1428 or Mathematics 1431.

**Humanities and Fine Arts:** 3 credits

**Social and Behavioral Sciences:** 3 credits

**Global/Multicultural Studies or Contemporary Life Skills:** 2 credits
- Complete at least 2 credits from the list of courses in the Global/Multicultural Studies or Contemporary Life Skills Category.
  *(CIS 1150 in program requirements fulfills this requirement)*

<table>
<thead>
<tr>
<th>TOTAL CREDITS FOR AAS DEGREE</th>
</tr>
</thead>
<tbody>
<tr>
<td>69</td>
</tr>
</tbody>
</table>

CIS.AAS.SOFTW (Java & .NET)
Catalog Description

The **Software Development degree** prepares students to design, develop, and maintain software through the implementation of established software design constructs in standard programming languages.

**Program Requirements** .................................................................34
Cis 1150   Understanding Computers, Information, and Systems .................................3
Cis 1160   Windows Command Shell ................................................3
Cis 1180*  Introduction to Networking ........................................3
Cis 1230*  Microcomputer Database Application .........................3
Cis 1310*  HTML and CSS .............................................................3
Cis 1400*  Programming Logic and Technique ..........................4
Cis 1450*  Introduction to Linux/Unix Operating Systems .....................3
Cis 2330*  Introduction to XML ...................................................3
Cis 2770   Introduction to System Analysis and Design .........3
Cis 2790*  Systems Analyst Simulation .....................................3
Engli 1105*  Workplace Writing ..............................................3

**Emphases Courses** .................................................................16
Select any two course sequences for a minimum of 16 hours.

**C++ Emphasis** .................................................................8
This emphasis focuses on the creation, maintenance, and support of software applications in the C++ environment.
Cis 2541*  C++ Language Programming ..................................4
Cis 2542*  Advanced C++ Programming .................................4

**Java Emphasis** .................................................................8
This emphasis focuses on the creation, maintenance, and support of software applications in the Java environment.
Cis 2571*  Introduction to Java ................................................4
Cis 2572*  Collections in Java ....................................................4

**Visual Basic Emphasis** ..........................................................8
This emphasis focuses on the creation, maintenance, and support of software applications in the VB environment.
Cis 1510*  Graphical User Interface Programming ..................4
Cis 2510*  Advanced Graphical User Interface Programming ............4

**.NET Emphasis** ...............................................................12
This emphasis focuses on the creation, maintenance, and support of software applications in the .NET environment.
Cis 1510*  Graphical User Interface Programming ..................4
Cis 2350*  Introduction to ASP.NET ........................................4
Cis 2561*  Introduction to C#.NET ...........................................4
* - course has a prerequisite

**Suggested Course Sequence**
(Full Time Enrollment)
(Java & Visual Basic Emphases)

Please note: A student’s readiness to perform college-level coursework is based on the student’s placement test and/or ACT scores. Below 1000 level coursework may be required prior to the student taking courses in the suggested sequences.

**First Semester (16 credits)**
- Cis 1150 (3)
- Cis 1160 (3)
- Cis 1400 (4)
- Engli 1105 (3)
- Math 1428 or 1431 (3)

**Second Semester (16 credits)**
- Cis 1180 (3)
- Cis 1310 (3)
- Cis 2571 (4)
- Spec 1100 or 1120 or 1150 (3)
- Humanities and Fine Arts (3)

**Third Semester (17 credits)**
- Cis 2330 (3)
- Cis 2572 (4)
- Cis 2770 (3)
- Cis 1510 (4)
- Physical and Life Sciences (3)

**Fourth Semester (16 credits)**
- Cis 1230 (3)
- Cis 1450 (3)
- Cis 2790 (3)
- Cis 2510 (4)
- Social and Behavioral Sciences (3)

For more information:
If you are considering this program as an area of study, please contact the Business and Technology Division office at 630-942-2592.

**Program web site:**
http://www.cod.edu/programs/cis/

CIS.AAS.SOFTW (Java & Visual Basic)
Each candidate for an Associate in Applied Science (A.A.S.) degree shall satisfactorily complete a minimum of 18 credits in General Education. For the Software Development degree, some General Education courses are already listed under program requirements. Therefore, students need 15 credits besides those listed under program requirements.

The following summarizes the minimum credits required in each of the specified General Education areas:

**Communication**: 6 credits  
Written: (3 credits) English 1101 or 1105  
*(English 1105 in program requirements fulfills this requirement)*

Oral: (3 credits) Speech 1100, 1120 or 1150

**Physical and Life Sciences**: 3 to 5 credits  
At least one course with a laboratory component.

**Mathematics**: 3 to 5 credits  
Select a minimum of 3 credits (1000 level or above).  
Select Mathematics 1102, 1104 or 1120 only where required in the degree program. Only one from the following three courses may count toward overall degree requirement credit: Mathematics 1635, Psychology 2280 or Sociology 2205. Only one of the following courses may count toward overall degree credit: Mathematics 1428 or Mathematics 1431.

**Humanities and Fine Arts**: 3 credits

**Social and Behavioral Sciences**: 3 credits

**Global/Multicultural Studies or Contemporary Life Skills**: 2 credits  
Complete at least 2 credits from the list of courses in the Global/Multicultural Studies or Contemporary Life Skills Category.  
*(Cis 1150 in program requirements fulfills this requirement)*

<table>
<thead>
<tr>
<th>TOTAL CREDITS FOR AAS DEGREE</th>
</tr>
</thead>
<tbody>
<tr>
<td>65</td>
</tr>
</tbody>
</table>
Catalog Description

The Software Development degree prepares students to design, develop, and maintain software through the implementation of established software design constructs in standard programming languages.

Program Requirements ......................................................34
Cis 1150 Understanding Computers, Information, and Systems ........................................3
Cis 1160 Windows Command Shell ........................................3
Cis 1180* Introduction to Networking ..................................3
Cis 1230* Microcomputer Database Application ...................3
Cis 1310* HTML and CSS .................................................3
Cis 1400* Programming Logic and Technique .......................4
Cis 1450* Introduction to Linux/Unix Operating Systems ............3
Cis 2330* Introduction to XML ...........................................3
Cis 2770 Introduction to System Analysis and Design ...............3
Cis 2790* Systems Analyst Simulation ................................3
Engl 1105* Workplace Writing ........................................3

Emphases Courses ............................................................16
Select any two course sequences for a minimum of 16 hours.

C++ Emphasis .................................................................8
This emphasis focuses on the creation, maintenance, and support of software applications in the C++ environment.
Cis 2541* C++ Language Programming ................................4
Cis 2542* Advanced C++ Programming ..............................4

Java Emphasis .................................................................8
This emphasis focuses on the creation, maintenance, and support of software applications in the Java environment.
Cis 2571* Introduction to Java ...........................................4
Cis 2572* Collections in Java ..............................................4

Visual Basic Emphasis .......................................................8
This emphasis focuses on the creation, maintenance, and support of software applications in the VB environment.
Cis 1510* Graphical User Interface Programming .................4
Cis 2510* Advanced Graphical User Interface Programming ....4

.NET Emphasis ...............................................................12
This emphasis focuses on the creation, maintenance, and support of software applications in the .NET environment.
Cis 1510* Graphical User Interface Programming ................4
Cis 2350* Introduction to ASP.NET ....................................4
Cis 2561* Introduction to C# .NET .....................................4
* - course has a prerequisite

Suggested Course Sequence
(Full Time Enrollment)
(Visual Basic and .NET Emphases)
Please note: A student’s readiness to perform college-level coursework is based on the student’s placement test and/or ACT scores. Below 1000 level coursework may be required prior to the student taking courses in the suggested sequences.

First Semester (16 credits)
• Cis 1150 (3)
• Cis 1160 (3)
• Cis 1400 (4)
• Engl 1105 (3)
• Math 1428 or 1431 (3)

Second Semester (16 credits)
• Cis 1180 (3)
• Cis 1310 (3)
• Cis 1510 (4)
• Speec 1100 or 1120 or 1150 (3)
• Humanities and Fine Arts (3)

Third Semester (17 credits)
• Cis 2330 (3)
• Cis 2510 (4)
• Cis 2770 (3)
• Cis 2350 (4)
• Physical and Life Sciences (3)

Fourth Semester (16 credits)
• Cis 1230 (3)
• Cis 1450 (3)
• Cis 2790 (3)
• Cis 2561 (4)
• Social and Behavioral Sciences (3)

For more information:
If you are considering this program as an area of study, please contact the Business and Technology Division office at 630-942-2592.

Program web site:
http://www.cod.edu/programs/cis/

CIS.AAS.SOFTW (Visual Basic & .NET)
Each candidate for an Associate in Applied Science (A.A.S.) degree shall satisfactorily complete a minimum of 18 credits in General Education. For the Software Development degree, some General Education courses are already listed under program requirements. Therefore, students need 15 credits besides those listed under program requirements.

The following summarizes the minimum credits required in each of the specified General Education areas:

**Communication**: 6 credits  
Written: (3 credits) English 1101 or 1105  
*(English 1105 in program requirements fulfills this requirement)*

Oral: (3 credits) Speech 1100, 1120 or 1150

**Physical and Life Sciences**: 3 to 5 credits  
At least one course with a laboratory component.

**Mathematics**: 3 to 5 credits  
Select a minimum of 3 credits (1000 level or above).  
Select Mathematics 1102, 1104 or 1120 only where required in the degree program. Only one from the following three courses may count toward overall degree requirement credit: Mathematics 1635, Psychology 2280 or Sociology 2205. Only one of the following courses may count toward overall degree credit: Mathematics 1428 or Mathematics 1431.

**Humanities and Fine Arts**: 3 credits

**Social and Behavioral Sciences**: 3 credits

**Global/Multicultural Studies or Contemporary Life Skills**: 2 credits  
Complete at least 2 credits from the list of courses in the Global/Multicultural Studies or Contemporary Life Skills Category.  
*(Cis 1150 in program requirements fulfills this requirement)*

**TOTAL CREDITS FOR AAS DEGREE**  
65
Career Information  CIS.AAS.SOFTW

Job Title(s): Software Developers, Systems Software
Developer, Infrastructure Engineer, Network Engineer, Publishing Systems
Analyst, Senior Software Engineer, Software Architect, Software Developer,
Software Engineer, Systems Coordinator, Systems Engineer

For salary and wage information, please visit: www.onetonline.org

If you would like information regarding internships, resume development,
interviewing and job search skills, please contact the Career Services Center
Phone: 630-942-2230
www.cod.edu/careerservices  Twitter:  @codcareercenter

Related Occupations:
Computer Systems Analysts  Computer Programmers
Information Security Analysts  Web Developers
Computer Network Architects  Database Administrators
Software Developers, Applications  Software Quality Assurance
Engineers and Testers
Catalog Description

The Application and Technical Support Specialist degree prepares students to provide help, support, and technical advice to computer users.

Program Requirements .......................................................... 36

<table>
<thead>
<tr>
<th>Course</th>
<th>Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cis 1150</td>
<td>Understanding Computers, Information and Systems</td>
<td>3</td>
</tr>
<tr>
<td>Cis 1160</td>
<td>Windows Command Line</td>
<td>3</td>
</tr>
<tr>
<td>Cis 1180</td>
<td>Introduction to Networking</td>
<td>3</td>
</tr>
<tr>
<td>OR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cit 1116</td>
<td>Network Essentials</td>
<td>3</td>
</tr>
<tr>
<td>Cis 1205</td>
<td>Office Suite Software Integration</td>
<td>3</td>
</tr>
<tr>
<td>Cis 1310</td>
<td>HTML and CSS</td>
<td>3</td>
</tr>
<tr>
<td>Cis 1400</td>
<td>Programming Logic and Technique</td>
<td>4</td>
</tr>
<tr>
<td>Cis 1450</td>
<td>Introduction to Linux/Unix Operating Systems</td>
<td>3</td>
</tr>
<tr>
<td>Cis 1610</td>
<td>Windows Client OS</td>
<td>3</td>
</tr>
<tr>
<td>Cis 2770</td>
<td>Introduction to System Analysis and Design</td>
<td>3</td>
</tr>
<tr>
<td>Busin 1111</td>
<td>Customer Service</td>
<td>3</td>
</tr>
<tr>
<td>Cit 1100</td>
<td>PC Maintenance and Upgrading</td>
<td>2</td>
</tr>
<tr>
<td>Engli 1105</td>
<td>Workplace Writing</td>
<td>3</td>
</tr>
</tbody>
</table>

* - course has a prerequisite

Program Electives ............................................................. 13

Select 13 hours from any CIS courses except CIS 1110. (In addition to the courses listed above.)

General Education ........................................................... 15

Each candidate for an Associate in Applied Science (A.A.S.) degree shall satisfactorily complete a minimum of 18 credits in General Education. For the Application and Technical Support Specialist degree, some General Education courses are already listed under program requirements. Therefore, students need 15 credits besides those listed under program requirements.

The following summarizes the minimum credits required in each of the specified General Education areas:

Communication: 6 credits
Written: (3 credits) English 1101 or 1105
(English 1105 in program requirements fulfills this requirement)
Oral: (3 credits) Speech 1100, 1120 or 1150

Physical and Life Sciences: 3 to 5 credits
At least one course with a laboratory component.

Mathematics: 3 to 5 credits
Select a minimum of 3 credits (1000 level or above).

Suggested Course Sequence
(Full Time Enrollment)

Please note: A student’s readiness to perform college-level coursework is based on the student’s placement test and/or ACT scores. Below 1000 level coursework may be required prior to the student taking courses in the suggested sequences.

First Semester (17 credits)
- Engli 1105 (3)
- Cis 1150 (3)
- Mathematics (rec: 1115) (3)
- Cis 1160 (3)
- Cit 1100 (2)
- Busin 1111 (3)

Second Semester (16 credits)
- Communication: Oral (3)
- Cis 1180 OR Cit 1116 (3)
- Cis 1205 (3)
- Cis 1400 (4)
- Humanities and Fine Arts (3)

Third Semester (15 to 17 credits)
- Cis 1310 (3)
- Cis 1610 (3)
- Program Elective (3 to 4)
- Program Elective (3 to 4)
- Physical and Life Sciences (3)

Fourth Semester (16 credits)
- Cis 1450 (3)
- Cis 2770 (3)
- Program Elective (3)
- Program Elective (4)
- Social and Behavioral Sciences (3)

For more information:
If you are considering this program as an area of study, please contact the Business and Technology Division office at 630-942-2592.

Program web site:
http://www.cod.edu/programs/cis/
Select Mathematics 1102, 1104 or 1120 only where required in the degree
program. Only one from the following three courses may count toward
overall degree requirement credit: Mathematics 1635, Psychology 2280 or
Sociology 2205. Only one of the following courses may count toward
overall degree credit: Mathematics 1428 or Mathematics 1431.

**Humanities and Fine Arts:** 3 credits

**Social and Behavioral Sciences:** 3 credits

**Global/Multicultural Studies or Contemporary Life Skills:** 2 credits
Complete at least 2 credits from the list of courses in the
Global/Multicultural Studies or Contemporary Life Skills Category.
*(Cis 1150 in program requirements fulfills this requirement)*

<table>
<thead>
<tr>
<th>TOTAL CREDITS FOR AAS DEGREE</th>
</tr>
</thead>
<tbody>
<tr>
<td>64</td>
</tr>
</tbody>
</table>
Career Information  CIS.AAS.TECH

Job Title(s): Software Developers, Systems Software
Software Engineer, Application Integration Engineer, Programmer Analyst,
Software Development Engineer, Computer Consultant, Software Architect,
Software Developer, Technical Consultant, Applications Developer, Business
Systems Analyst

For salary and wage information, please visit: www.onetonline.org

If you would like information regarding internships, resume development,
interviewing and job search skills, please contact the Career Services Center
Phone: 630-942-2230
www.cod.edu/careerservices  Twitter: @codcareercenter

Related Occupations:
Computer Systems Analysts  Computer Programmers
Information Security Analysts  Web Developers
Computer Network Architects  Database Administrators
Computer Systems Engineers/Architects  Software Quality Assurance
                              Engineers and Testers